

# ***Lava Beds National Monument***

## ***Teacher Activity Guide***

### **Introduction**

This teacher activity guide contains eight activity units. The first seven units address a topic related to volcanoes and lava tube caves. The eighth unit is review of the previous sections. The units are specifically designed to teach about the geology of the northern California/southern Oregon region with special emphasis on Lava Beds National Monument. All activities are designed for use in the classroom.

Each unit contains background information for use by the teacher. Following is at least one activity to be incorporated into the classroom. Most materials necessary to present these activities have been included in this package. These activities are written for upper elementary students, but many can be expanded or modified for other grade levels.

The primary goal of this activity guide is to enable the teacher to present information in the classroom before conducting a field trip to the monument. We hope that by using this guide the visit to Lava Beds will be a comprehensive educational experience.

### **Overview of Units**

#### **Unit 1 - Plate Tectonics and the Cascade Range**

This unit contains information about the layers of the earth, movements of tectonic plates, and the processes that created the Cascade Mountain range. The unit contains two activities. The first focuses on plate tectonics and the process of subduction. The second covers the creation of the Cascade Range and volcanoes.

Activity A contains:

- Activity information and directions
- Unlabeled diagram of subduction, student copy
- Colored and labeled diagram of subduction and volcanic arc, teacher copy

Activity B contains:

- Activity information and directions
- Map of Cascade Volcanoes, teacher copy and student copy
- Maps of California, Oregon, and Washington, teacher Copy (maps have volcanoes marked on them)
- Paper model of composite volcano

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## ***Overview of Units***

### **Unit 2 - Volcanic Eruptions Create . . .**

This activity contains information about the different types of volcanoes and volcanic features. The unit contains two activities. The first activity has students color in diagrams of different volcanic vents (shield volcano, cinder cone, composite volcano, and spatter cone). The second activity is an adaptation of the card game “Concentration.” Students will learn about the volcanic land forms by matching the diagram, description, and photograph of each different land form.

Activity A contains:

- Activity information and directions
- Diagrams of a shield volcano, a composite volcano, a cinder cone, and a spatter cone

Activity B contains:

- Activity information and directions
- Photographs and descriptions of eight different volcanic land forms found at Lava Beds, teacher Copy
- Black and white diagrams of volcanic vents for students to color
- Cards to play “Magma Memory Match-Up”

### **Unit 3 - Volcanic Terminology**

This unit introduces new volcanic and geologic terms. In Activity A, the terms are defined and students complete a word-construction exercise, crossword puzzle, and word search. In Activity B, students learn how many volcanic terms are derived from ancient myths and will test their understanding of volcanic terminology by writing their own volcano myths.

Activity A contains:

- Teacher information, activity information and directions
- Laminated volcanic terms, divided by syllable
- Crossword Puzzle and word search, teacher copy and student copy

Activity B contains:

- Teacher information, activity information and directions

### **Unit 4 - The Rock Cycle**

This unit contains information on the rock cycle, focusing on igneous rocks. The activity has students completing a rock cycle worksheet and then examining rock samples and making classifications based on their observations.

Activity contains:

- Activity information and directions
- Rock cycle worksheet, teacher copy and student copy
- Rock sample box
- Rock match-up worksheet, teacher copy and student copy

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## ***Overview of Units***

### **Unit 5 - Lava Tubes and Cave Formations**

This unit focuses on how lava tubes form and the many different formations inside the tubes. The activity consists of creating a shoebox diorama of the inside of a lava tube. The activity will continue into unit 6, where cave creatures are added to the diorama.

Activity contains:

- Activity information and directions
- Color-in cutouts of different lava formations
- Photos of caves and formations found at Lava Beds National Monument

### **Unit 6 - Cave Creatures**

This unit addresses the different animal species that live in caves and how those animals have adapted to the cave environment. The unit also covers the different life zones within a cave and how the habitat changes between zones. In the activity, students will bring in photos of animals and place them in their cave zone, using the blackboard and worksheet. The second part of the activity is a continuation from unit 5. Using the color-in cutouts, students can add cave creatures to their lava tube dioramas.

Activity contains:

- Activity information and directions
- Cave zones worksheet
- Color-in cutouts of cave creatures, photos of cave creatures found at Lava Beds National Monument

### **Unit 7 - Caver Ready!**

This unit teaches students how to “cave safely, cave softly” and the role of the National Park Service in protecting natural resources. In this unit students will be able to name the equipment needed when visiting a cave. They will also be able to explain why caves are fragile and how to minimize human impact on the cave environment. In the activity students will classify various scenarios as constituting proper or improper caving behavior.

Activity contains:

- Activity information and directions
- Illustration and explanation cards

### **Unit 8 - Lava Beds: The Game**

This unit is designed as a review of the previous units. A board game asks questions from five categories – biology, plate tectonics, the Cascades Range, rocks, and safe caving. This unit is also a good tool for wrapping up a field trip to Lava Beds.

Activity contains:

- Activity information and directions
- Game board, 5 sets of color-coded questions for each category, team tokens, spinner, game die